

**IDENTIFICATION OF SIGNS OF DISTRESS AND DISEASE IN
CAPTIVE WILD ANIMALS, BEHAVIORAL PROBLEMS, NUTRITION,
ISOLATION, COLLECTION OF SAMPLES**

Dr. R. G. Jani,
Co-ordinator, Wildlife Health,
Western Regional Center,
Anand Veterinary College,
Anand, Gujarat

The regular record keeping and feed intake in captivity with close observation helps the veterinarian to understand the distress and diseases in captivity but it is very difficult to assess in free living wild population. The health status of a wild population can be assessed by evaluating the following components:

Habitat evaluation
Population statistics &
Direct animal assessment

Habitat evaluation is essential because long term survival of a population depends to a greater extent on the habitat quality. This evaluation includes estimating vegetation / prey biomass, level of disturbance (over grazing, competition etc.) and other habitat components, perhaps by using HIS models information on population statistics is important because the ultimate measure of a population condition is its reproductive success. This includes various population parameters such as natality, mortality, net recruitment rate etc. Direct animal assessment is also important because individuals of a population act as indicators of the status of their relationship with the environment. This last component is otherwise the health monitoring of animal populations.

Health monitoring procedures for wild animals should be a regular exercise in protected areas. Unfortunately, such programs rarely form a regular part of the management practices because of the wrong notion among managers and biologists that (i) the need for disease monitoring arises only when there is an epidemic and (ii) that diseases occur only when an infective agent is involved. This opinion is not justified because (i) only a few infections are manifested as disease while many are not so immediately obvious and (ii) the most prevalent disease syndrome in wildlife is the malnutrition / starvation complex.

Monitoring condition of animals:

Condition of an animal responds to the changes in its habitat quality, which is governed by many interrelated component factors which are often seasonal in nature. Through most animals are subjected to many of these factors, their effect on the overall health of a population may be more apparent in some species or in different age or sex groups of the same species.

The deterioration of condition could be due to nutritional stress chronic diseases resulting in muscle wasting of natural biological reasons (pregnancy / lactation in females & rutting in males). Many non-infectious diseases and biological processes, however, leave a noticeable effect on the body condition of animals. Condition of live animals can be assessed by looking at their appearance or body condition and condition of dead animals can be assessed by estimating the extent of fat deposition in the body.

Monitoring infection and disease

Observational methods of monitoring infectious diseases

Laboratory based methods of monitoring infections and diseases

- (a) Postmortem Investigation
- (b) Serological surveys
- (c) Macro-parasitological investigations
- (d) Screening for micro parasites

Body condition evaluation:

Behavioural Problems Of Wild Animals:

Primates: Hyper grooming, bizarre, stereotype, mal adaptive human imprint effects are common. Cage destruction, paint chewing, masturbation, self mutilation, emesis followed by coprophagia, anorexia, body weight loss, depression are commonly observed psychopathology due to stress and improper introduction to other cage mate or to those primates caught from wilderness.

Ruminants: Hair plucking, coprophagia, fighting, stereotyped behaviour are expressed on account of unoccupied hours except feeding.

Felids: Circle running, figure eights, rolling over, tail and paw chewing, enuresis, encopresis, pica, hyperesthesia, aggression, frustration, stereotyped behaviour have been documented in felids.

Canids: In free living the canids stay in pack. They have some typical behavioural problem in cages which are some what similar to felids.

Ursidae/Viverridae And Hyaenidae: Hiking eggs, anxiety, pacing, anal sac material throwing are common natural behaviour in viverridae and hyaenidae, stereotyped movement, head swaying, to and fro pacing and pacing with head bobbing, paw sucking and dancing are some of the observed unusual behaviour to express their unhappiness by bears.

Perrisodactyla, Proboscidae And Hippopotamidae: They are social, living in groups and may face problem of stereotyped in captivity as others described earlier.

Rodents And Lagomorphs: If placed isolated can become more aggressive expressing circling, convulsion and "figure-8" walking patterns. Cannibalism and cage mate fighting, hypoglycemia, compulsive water drinking are some of the abnormal behaviour.

Aves: They express territorial, breeding activity based on day light hours. Cannibalism, vent picking, feather picking are some of the behavioural problem.

Reptiles And Amphibians: They do not express psychopathology if kept with proper caging and environment. Pacing back, ecdiais and shedding are common in snakes. Basking in reptiles and amphibians is often common and one must provide larger area and movement as well as hiding space with darkness also.

Some Useful Tips For The Captive Feeding And Nutrition:

- Animal must be fed fresh, palatable, uncontaminated and nutritionally adequate food according to the species specific requirement of zoo animals.
- The food must have optimum taste, nutritional value, palatability and preferred by the species.
- If the food is required to be stored, it should be procured and stored as per the guidelines. The perishable food and vegetables can be kept at 40-45 degree F.

- Meat with its high level of protein and water presents an ideal medium for decomposing organism and must be cooled quickly after the animal is slaughtered.
- After studying the digestive coefficient of various foods species requirement for the type, quantity and quality of food for species should be determined and provision, be made accordingly.
- Feeding timings should be strictly adhered to until and unless there is some emergency Otherwise, the animals will pick up undesirable habits and vices.

Nutritional requirements and palatability are essential as animals requirements change from season to season and with age too. Changes in diets or dietary manipulations if made in overcoming the problems should be recorded with reason thereof. All the captive wild mammals require attention to stress because the benefits of nutritional support must be weighed against the duress suffered by wild animals under captive environment.

Individual diets should be modified to match the changing physiological state of the animal i.e. new born, young, growing, pregnant, lactating sick. recovering etc. For the new arrivals and also in case of convalescent animals nutritional support is always started gradually, no matter what the final caloric goal may be All are started at below maintenance levels for the first few days of refeeding and the total amount is increased gradually over time. If the nutritional support is started at the full amount, animals may have intestinal pain and diarrhea. If the first few meals are started slowly and diluted. There will be fewer problems associated with refeeding.

Starvation decreases metabolic rate producing a condition termed hypo metabolism. Starved, moribund and other sick animals require fewer calories than usual.

Any animal, rescued under extra ordinary circumstances and placed in the zoo, has to be provided good nutritional support for better thriving and also for safe health. Ectotherms require attention to ambient temperature as food is digested incompletely. Reptiles such as python, king cobra, etc. are fed once a week. Most amphibians remain active and feed well at 20°C to 25°C. Snakes, turtles, crocodiles, lizards, etc. remain active and do well between 25°C to 35°C. However, diurnal lizards and crocodiles are given voluntary access to the higher temperatures between 32° to 31°C (89 OF to 990 F) As the temperature goes down in winter, the metabolism of aquatic animals,

reptiles, etc. is depressed and feeding requirements of many species are curtailed. In such cases forced feeding should be avoided.

Attention should be diverted to study abnormalities related to nutrition, metabolism, consumption of toxic substances, etc. Many disorders increase metabolic rate producing condition termed hyper metabolism. A vivid example is hyperthyroidism in cats, Occurrence of similar condition. In large felids can not be ruled out. Other examples include fractures, infections, burns, etc Animal with a disease that increases metabolic rate requires more calories than usual.

In case of deer, antelopes, wild asses and primates, to avoid conflicts and fighting among cage mates, the feed should be provided either on a long stretched platform or at several points so that each individual animal gets easy access to take its quota of ration, Trampling of weak neonates and intimidation of sub-adults by stronger ones must be. Aggressive individuals should be cared isolated immediately.

Big cats, canids and ursids, after weaning from their mothers, should be fed individually. Bears, apes and macaques are fed twice a day and small cats and puppies should be fed thrice a day. Never feed frozen cold meat until it is thawed to room temperature. The thawed meat, if not used, should not be refrozen to store. Water quality for turbidity, salinity, oxygen, minerals and its availability in the enclosures should be checked regularly. The water troughs/pots should be cleaned regularly to avoid formation of algae and collecting therein of any foreign matter. Female's suckling offspring need more water. Water requirement also varies when there is change in the environment.

For hand rearing, special milk formulae have to be prepared which are different for each and every baby some animals need milk with low fat and high protein content while others.

Isolation And Collection Of Bio Samples:

A. Pre Laboratory Procedure At Field Level:

1. Recording and Submitting Specimen History Data :The details of species affected, age, sex, number of sick/number of dead animals, major clinical signs and population at risk should be considered to determine what species, and in what numbers, are in the vicinity of the die-off. The information regarding the specific features of problem areas should also be collected in some special circumstances which include any available precise location data, such as global positioning information (GPS) or data that will facilitate entering of specific locations into geographical information system (GIS) databases.

Describe the problem area in terms as topography, soil, vegetation, climate, water conditions, and animal and human use.

2. Specimen Collection and Preservation: Specimens are used to provide supporting information leading to the diagnosis of a cause of disease or death. A specimen may be an intact carcass, tissues removed from carcasses, parasites, ingested food, feces, blood, serum, pus, milk or environmental samples. The specimen should be as fresh and undamaged as possible.

The following points should be taken care for submission of biomaterials to the laboratory. Choosing a specimen, collection protocol, sample collection, labeling specimens, preservation, shipment, preventing breakage and leakage during shipment, cooling and refrigeration, specimen shipment, completing the packaging process and dispatch of materials as per proper protocol discussed during the talk.

Methods and Materials for Collection and their dispatch to laboratory:

Smears: Smears are required to be prepared from blood, exudates, other body fluids, discharges from wounds, uterine or other discharges. The blood smear should preferably be collected at the height of the temp before administering, antibacterial, antibabesial, and antitrypanosomal drugs. In suspected trypanosomal, filarial infection blood smears should be of thick quality. Smears are dried in air and fixed with Methyl alcohol for 2-3 minutes. Slides with smears are packed with paper with matchstick in between two adjacent slides to keep the smears apart from each other.

Blood: Blood from ailing animals is collected from peripheral circulation and from dead animals from right auricle or ventricle. Blood should be collected with sterile syringe and needle whenever any septicaemic disease condition or viraemia in viral disease occurs. Blood should be collected in screw capped bottles having anticoagulants and transferred to freezer and dispatched over ice in thermos.

Serum: For collection of serum, blood is collected from convalescent or recovered animals with sterile precautions and allowed to clot in sterile test tube or Mc-cartney bottle. After clot when serum is separated it is transferred with the help of sterile Pasteur pipette into a screw-capped tube or bottle. For preservation of serum sample carbolic acid and

Merthiolate are added so that final concentration of these two in the serum sample is 0.5% solution and 1: 10,000 respectively.

Cotton Swabs: For collection of scanty amount of body fluids, secretion, effusion or transudates etc. cotton swabs may be used. This cotton swab is then inserted into the test tube and the mouth of the tube is plugged with absorbent cotton and sterilized in hot air oven.

Pus, Sputum, Throat and Uterine Discharges, Exudates, Transudates and other Body Fluids:

They are collected with sterile pipettes, Pasteur pipettes or with the help of syringes with sterile precautions and contamination, when discharges and fluids are scanty they are collected with the help of sterile cotton swabs. After collection the fluids are transferred in screw capped bottles and swabs into test tubes. They are dispatched over ice in thermos.

Milk: Wash the udder with some antiseptic solutions, wipe out with towel and dry, discard few strippings and collect 15-20 ml. from each quarter. Separate samples should be collected from each quarter. Dispatch in screw capped bottles over ice in thermos.

Urine : Collection with sterile catheter should be emphasized, or after cleaning the external genitalia with mild antiseptic and after drying.

Skin Scrapings and Hair: From dermatomycotic cases and Mange, deep scrapings from recently developed lesions mainly from periphery of the lesions should be collected. From dermatomycotic infections few hairs from affected lesions should also be pulled out and put in the specimen. The specimen may be sent in paper.

Faecal Samples: For diagnosis of helminth infection faeces should be collected from the animal itself and not from ground. Atleast 10 gm. of faecal sample should be sent after adding 10% formalin as preservative.